

**Report on the Status of Contact Voltage Surveys, Mitigation and
Reports
In the State of Maryland**

**Prepared by
The Public Service Commission of Maryland**

**Prepared for the General Assembly of Maryland
Under Public Utilities Article §7-214 and Section 2 of SB 929 (2012)**

January 29, 2013

At a rulemaking session on March 24, 2011, during which the Maryland Public Service Commission (“PSC”) considered RM 43 (Revisions to COMAR 20.50 - Service Supplied by Electric Companies - Proposed Reliability and Service Quality Standards), Mr. and Mrs. Anthony Green submitted written comments, and appeared, requesting inclusion of regulations that would address the issue of contact voltage detection, repair and reporting. The Green family sought adoption of regulations that would ensure that no other person died under circumstances similar to the death of their daughter, Deanna Camille Green, who was killed by contact voltage while participating in a softball game at Druid Hill Park, in Baltimore City. The PSC agreed that the proffered regulations were important, but separated their consideration from the on-going, and almost completed, RM 43 proceedings.

On April 8, 2011, the PSC initiated rulemaking 44 (RM 44) and provided a procedural schedule to address the problem of contact voltage. The PSC directed that parties submit written comments in response to the Green family’s proposed rules by April 29, 2011. PSC Staff was directed to convene a work group of interested parties to review the Green family’s proposed regulations, and to gather relevant technical and other information that would guide the rulemaking proceeding and assist in formulating rules. Staff was further directed to submit a report on or about June 17, 2011, that incorporated contact voltage research, as well as proposed regulations for publication in the Maryland Register. In addition to the report submitted by Staff, numerous other parties submitted technical or supporting comments. The PSC set a rulemaking session for July 7, 2011 and afforded interested parties an opportunity to submit written comments on Staff’s report by June 17, 2011.

At the July 7, 2011 rulemaking session, the PSC heard testimony from the electric utilities and numerous other parties and approved proposed rules for publication. Following publication of the proposed rules in the Maryland Register on September 9, 2011, the PSC held a final rulemaking session to approve final publication of the proposed regulations. The rules became effective on November 28, 2011 and implementation has been on-going.

SB 929, Chapter 624 of the Acts of Maryland of 2012, codified similar requirements as were implemented in RM 44. In addition, this new law contained an uncodified section, as follows:

SECTION 2. AND BE IT FURTHER ENACTED, That, on or before January 1, 2013, the Public Service Commission shall submit a report to the General Assembly, in accordance with § 2-1246 of the State Government Article, on the progress of the implementation of this Act and the regulations under COMAR 20.50.11: Deanna Camille Green Rule – Contact Voltage Survey Requirement and Reporting Authority, including the status and availability of contact voltage technology in the State.

This report is submitted in compliance with this requirement.

Potomac Edison (PE) Contact Voltage Risk Zone Plan

On January 31, 2012, PE filed its proposed Contact Voltage Risk Zone (CVRZ) map (PSC Mail Log No. 136780) pursuant to COMAR 20.50.11.01A(1), in which it defined downtown Frederick as a risk zone. By its Notice of Approval issued June 19, 2012, the Commission approved PE's CVRZ.

PE filed its Contact Voltage Survey Plan (PSC Mail Log No. 141763) on August 7, 2012, which included a detailed description of its Contact Voltage Survey Plan that addressed the following topics:

Survey frequency – The first survey for PE's CVRZ will be completed within 1 year of Commission approval, and annually thereafter. For areas not located within the CVRZ, the first survey will be completed within 3 years of Commission approval of the plan and every 5 years thereafter.

Equipment – PE provided a list of the equipment it plans to use for contact voltage detection and measurement, as well as the third party test certificate from National Testing Systems laboratory.

Procedure – PE provided a description of the procedure it intends to use to detect, measure and mitigate contact voltage.

Staff evaluated PE's filing and believes it is compliant with both the spirit and intent of the regulation. Staff recommended the Commission approve the PE Contact Voltage Survey Plan and the Commission approved PE's plan on December 10, 2012.

Southern Maryland Electric Cooperative (SMECO)

On January 31, 2012, SMECO made its CVRZ filing (PSC Mail Log No. 136792) in which it stated it had no CVRZ within its territory. Instead, it filed its Contact Voltage Survey Plan in compliance with COMAR 20.50.11.

SMECO provided the following description of its Contact Voltage Survey Plan:

Survey frequency – SMECO has no CVRZ, so its first survey will be completed within 3 years of Commission approval of the plan and every 5 years thereafter.

Equipment – SMECO provided a list of the equipment it plans to use for contact voltage detection and measurement, as well as the third-party test certificate from National Testing Systems laboratory.

Procedure – SMECO provided a description of the procedure it intends to use to detect, measure and mitigate contact voltage.

Contact Voltage Observation Form and Contact Voltage Summary Form - SMECO provided a Contact Voltage Observation Report to be used with each incidence of contact voltage detection and a Contact Voltage Summary form which it proposed to use in providing a summary of all of the contact voltage observations.

Staff evaluated the SMECO filing and believes it is compliant with both the spirit and intent of the regulation. Staff recommended the Commission approve SMECO's Contact Voltage Survey Plan, which the Commission approved on January 14, 2013. Staff also recommended the Commission approve the Contact Voltage Observation Form and the Contact Voltage Summary Form SMECO proposed. By its Notice issued on January 29, 2013, the Commission approved these two forms that include the minimum data requirements for each electric company's annual compliance reporting obligation.

Baltimore Gas and Electric Company (BGE)

On January 31, 2012, BGE filed its proposed Contact Voltage Risk Zone (CVRZ) map (PSC Mail Log No. 136788) pursuant to COMAR 20.50.11.01A(1), in which it defined downtown Baltimore, specific Baltimore corridors outside the downtown CVRZ and CVRZ zones in Essex, Towson, Parkville and Woodlawn. By its Notice of Approval issued June 19, 2012, the Commission approved the BGE CVRZs.

BGE filed its Contact Voltage Survey Plan (PSC Mail Log No. 141781) on August 7, 2012, which provided a detailed description of its Contact Voltage Survey Plan including:

Survey frequency – The first survey for BGE's CVRZ will be completed within 1 year of Commission approval, and annually thereafter. For areas not located within the CVRZ, the first survey will be completed within 3 years of Commission approval of the plan and every 5 years thereafter.

Equipment – BGE provided a list of the equipment it plans to use for contact voltage detection and measurement, as well as the third-party test certificate from National Testing Systems laboratory. Two providers of mobile test equipment filed confidential third-party certificates with the PSC in support of the BGE proposal to use the mobile test equipment of both vendors. Power Survey Company's certificate was filed as PSC Mail Log No. 141672 and Premier Utility Services' certificate was filed as PSC Mail Log No. 143278.

Procedure – BGE provided a description of the procedure it intends to use to detect, measure and mitigate contact voltage.

Staff evaluated BGE's filing and believes it is compliant with both the spirit and intent of the regulation. In its pending recommendation, Staff recommends that the Commission approve the BGE Contact Voltage Survey Plan as submitted.

Potomac Electric Power Company (Pepco)

On January 31, 2012, Pepco filed its proposed Contact Voltage Risk Zone (CVRZ) map (PSC Mail Log No. 136790) pursuant to COMAR 20.50.11.01A(1), in which it defined downtown Bethesda, downtown Silver Spring and downtown Rockville as CVRZs. By its Notice of Approval issued June 19, 2012, the Commission approved the Pepco's CVRZs.

Pepco filed its Contact Voltage Survey Plan (PSC Mail Log No. 141789) on August 7, 2012, which provided a detailed description of its Contact Voltage Survey Plan that addressed the following topics:

Survey frequency – The first survey for Pepco's CVRZ will be completed within 1 year of Commission approval, and annually thereafter. For areas not located within the CVRZ, the first survey will be completed within 3 years of Commission approval of the plan and every 5 years thereafter.

Equipment – Pepco provided a list of the equipment it plans to use for contact voltage detection and measurement, as well as the third-party test certificate from National Testing Systems laboratory. Pepco stated that it intends to use mobile survey equipment to test its CVRZs, however third-party certificates required by COMAR have not yet been filed by Pepco.

Procedure – Pepco provided a description of the procedure it intends to use to detect, measure and mitigate contact voltage.

Staff evaluated the Pepco filing and believes it is compliant with both the spirit and intent of the regulation. In its pending recommendation, Staff recommends that the Commission approve the Pepco Contact Voltage Survey Plan as submitted.

Delmarva Power and Light (Delmarva)

On January 31, 2012, Delmarva filed its proposed Contact Voltage Risk Zone (CVRZ) map (PSC Mail Log No. 136789) pursuant to COMAR 20.50.11.01A(1) in which it defined the southern tip of Ocean City (the area south of the Route 50 bridge) as its CVRZ. By its Notice of Approval issued June 19, 2012, the Commission approved Delmarva's CVRZ.

Delmarva filed its Contact Voltage Survey Plan (PSC Mail Log No. 141789) on August 7, 2012, which provided a detailed description of its Contact Voltage Survey Plan that addressed the following topics:

Survey frequency – The first survey for Delmarva's CVRZ will be completed within 1 year of Commission approval, and annually thereafter. For areas not

located within the CVRZ, the first survey will be completed within 3 years of Commission approval of the plan and every 5 years thereafter.

Equipment – Delmarva provided a list of the equipment it plans to use for contact voltage detection and measurement, as well as the third-party test certificate from National Testing Systems laboratory. Delmarva has stated it intends to use mobile survey equipment to test its CVRZs, however third-party certificates required by COMAR have not yet been filed by Delmarva.

Procedure – Delmarva provided a description of the procedure it intends to use to detect, measure and mitigate contact voltage.

Staff evaluated Delmarva’s filing and believes it is compliant with both the spirit and intent of the regulation. In its pending recommendation, Staff recommends that the Commission approve the Delmarva Contact Voltage Survey Plan as submitted.

Choptank Electric Cooperative (Choptank)

On February 3, 2012, Choptank filed its proposed Contact Voltage Risk Zone (CVRZ) map (PSC Mail Log No. 136800) pursuant to COMAR 20.50.11.01A(1) in which it stated it had no CVRZ within its territory. Instead, it filed its Contact Voltage Survey Plan in compliance with COMAR 20.50.11.

Choptank provided the following description of its Contact Voltage Plan:

Survey frequency – Choptank has no CVRZ, so its first survey will be completed within 3 years of Commission approval of the plan and every 5 years thereafter.

Equipment – Choptank provided a list of the equipment it plans to use for contact voltage detection and measurement, as well as the third-party test certificate from National Testing Systems laboratory.

Procedure – Choptank provided a description of the procedure it intends to use to detect, measure and mitigate contact voltage.

Staff evaluated the Choptank filing and continues to work with Choptank to ensure that the voltage measurement threshold that would trigger corrective action is consistent with the standard set forth in COMAR 20.50.11.03C. With that modification, Staff believes that Choptank’s filing is compliant with both the spirit and intent of the regulation. In its pending recommendation, Staff recommends that the Commission approve the Choptank Contact voltage plan as modified to be compliant with COMAR 20.50.11.03C.

Equipment available for Voltage Detection in Maryland

Equipment used to detect stray voltage varies, but common devices are hand-held stray voltage tester devices and mobile stray voltage detector equipment, both of which require

follow-up testing using a low-impedance voltmeter with a 500 ohm shunt resistor installed across its terminals.

Hand-Held Equipment

Hand-Held Electrical tester pen devices are hand-held equipment which detect a voltage difference between the user's hand and the object being tested. They generally indicate on contact with an energized object, if the potential difference is above the sensitivity threshold of the equipment.

Stray voltage detectors detect the presence of voltage on objects that would normally be expected to have no voltage present. Such voltages, when detected, require additional testing to determine whether the voltage is harmless stray voltage or potentially harmful contact voltage. Additional testing is performed on the identified objects using a standard voltmeter equipped with a 500 ohm shunt resistor installed across its terminals. When the test with a volt meter is performed on an object energized with stray voltage, the voltage level will collapse to zero, indicating it is not a hazard. When the test with a volt meter is performed on an object energized with contact voltage, the voltage level will drop only slightly indicating that real power or contact voltage exists. In such a case, the utility would be required to make the area safe and arrange for remedial action to be taken to eliminate the cause of the contact voltage.

Maryland utilities have selected the HD Electric Company Model HD LV-S-05 Hand-held Stray Voltage Detector¹ and filed third-party test certificates attesting that the HD Electric Company product meets the COMAR 20.50.02 requirement that such equipment be certified to reliably detect voltages in the range of 6 to 600 volts.

Mobile Equipment

Mobile electric field detectors detect electric field strength relative to the mounting platform by sensing electric field gradients at a distance of up to 30 feet. These instruments are useful for scanning or screening large areas for potential electrical hazards and are the basis for mobile voltage detection systems. Positive indications of the presence of voltage require additional testing with a voltmeter with a 500 ohm shunt resistor to identify the object or objects that triggered the voltage indication. As with hand-held detectors, the volt meter with a 500 ohm shunt resistor is also used to determine whether the voltage is harmless stray voltage or contact voltage that needs to be mitigated.

Two mobile testing products have been evaluated and proposed for use by Maryland utilities.

¹ <http://www.hdelectriccompany.com/assets/files/lvs5.pdf>

The first mobile product is the SVD2000² Mobile Voltage Detection System proposed by Power Survey Company. Power Survey Company has filed its third-party test certificate under confidential seal, and the test results³ indicate that the equipment meets the COMAR 20.50.02 requirement that such equipment be certified to reliably detect voltages in the range of 6 to 600 volts.

The second mobile product is the Model 8950/10 Mobile Stray Voltage Detection System, Model 8950/10⁴ proposed by Premier Utility Services. Premier Utility Services has filed its third-party test certificate under confidential seal, and the test results⁵ indicate that the equipment meets the COMAR 20.50.02 requirement that such equipment be certified to reliably detect voltages in the range of 6 to 600 volts.

The Commission will continue to evaluate additional information that may be offered by the parties, until such time as all utility plans have been approved.

² http://ghoventures.com/psc_mobile.aspx

³ Testing performed by Ergonomics, Inc.

⁴ <http://datasheets.globalspec.com/ds/5038/NardaMicrowaveEast/4FB6CE2F-D3E8-4EE1-B373-E917692DBCE8>

⁵ Testing performed by National Technical Systems, Inc.